



Digital Imaging of Wayside Exhibit Panels

In outdoor exhibit circles, there is considerable excitement about the new digital imaging of wayside exhibit panels. Indeed, the new technology is very exciting, offering a number of advantages over fiberglass-embedded screen prints or porcelain enameled panels. However, several factors suggest that digitally-imaged waysides may not be ready for unlimited use.

The Advantages of Digital

First, when panels are imaged directly from computer files, production steps associated with the other imaging techniques are eliminated. Production costs (i.e., the initial cost of a single panel exclusive of planning, design, and the purchase of artwork) are lower -- much lower. A 24"x 36" digital panel will range in price from \$300 to \$700 depending on the specific digital technology used and the visual complexity of the panel. The same panel, in fiberglass, could cost \$3,000. In porcelain enamel, the cost could range as high as \$4000. Porcelain and fiberglass do have some significant advantages over digital imaging. Initial cost is not one of them.

The production of a fiberglass or a porcelain panel (i.e., the time it takes from when production materials are delivered to a vendor until completed panels are delivered to a park) typically takes three to four months. Production of a porcelain panel is a complex process; color images are rendered by applying ground glass that has been colored with mineral oxides to steel sheets and repeatedly heating the panel to very high temperatures. Production of a fiberglass panel is also complex; color is rendered by repeatedly forcing pigments through polyester (originally silk) screens to which various stencils have been applied. The resulting print must then be shipped to another vendor where it is embedded in fiberglass. On the other hand, digital imaging, which is based on technologies similar to a desktop color printer, can be done very quickly. Once the vendor receives the production materials, a panel can be produced and delivered in about 60 days.

Finally, panels that are directly imaged are probably more friendly to the environment, an important feature to the National Park Service. Although we know of no comparative studies, we do know that both screen printing and porcelain imaging involve toxic materials or consume considerable energy. The storage and transportation of the bulky production materials (original mechanicals and films) associated with screen printing and porcelain production is also consumptive and costly.

Concerns About Digital

With so much going for it — lower initial cost, quicker delivery, and maybe even friendlier to the environment — surely all new wayside exhibit panels will be imaged digitally. Perhaps someday, when the technology is perfected, they will. Now, however, several factors suggest that directly imaged waysides may not be ready for unlimited use. First, and perhaps most important, is durability, especially important to an organization with limited maintenance resources. In fact, durability is one of the primary reasons why the two current imaging methods were chosen — porcelain because it is rugged, fiberglass because it is inexpensive to replace. No one yet knows for sure how long a digital panel will last. Like all outdoor exhibits, their durability will depend on their resistance to weathering and to vandalism.

The sun is the most damaging natural threat to a wayside panel. Porcelain is very resistant

to sunlight, not fading for 25 years or more. In fact, some advertising signs rendered in porcelain still look fresh after 50 years outdoors. Fiberglass is less resistant to sun, and may, in certain environments, begin to fail in as little as two years. In other areas, however, it can last up to 10 years. The resistance of digitally imaged panels to the sun is unknown. Two questions are yet unanswered: How long will the color pigments endure? And, how long will digital panels resist delamination or other physical degradation. Current warranties range from 5 to 10 years, depending on the product and the manufacturer.

Of course the life of any panel can be greatly shortened by vandals. No outdoor exhibit can survive against a visitor who damages it intentionally. But, thankfully, exhibit panels can be made to resist damage—primarily scratching—by visitors whose abuse is unintentional. One product we are testing combines the high image resolution of an inkjet print with the known durability of fiberglass. We will continue to use this and other products to accurately rate and compare their strength and durability.

Making the Choice

Choosing which of the various materials to use is not always an easy decision to make. Indeed, digital imaging has much to offer, but it is still in the experimental stage. Our best advice is to use it, but to be conservative in the extent of its use. It may be appropriate when the information they contain is likely to change soon and frequently—maps, schedules of operation, etc. In fact, since panels that contain this type of information are usually mounted vertically (rather than angled, like most interpretive panels) digital prints are more appealing because warranties are sometimes limited to vertical mounting.

In addition to deciding whether to use digitally imaged waysides, parks must also decide which digital technology is best. Choosing the right digital product can be difficult. There is already a range of products available and still others being developed. Competition among suppliers is lively. Claims from some regarding long-term durability may not prove to be true. If you are considering a direct digital image product for wayside exhibit use (or any other type of wayside product for that matter), we suggest that you call us so that we can share our experience with that product with you.

We will continue to test the various products currently on the market and examine new ones as they emerge. Perhaps soon, the search will yield a wayside exhibit panel that is inexpensive, attractive, easy to produce, and long-lived.